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July 1969

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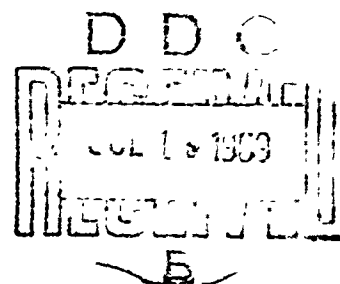
METEOROLOGICAL DATA REPORT

NIKE-HYDAC STV-86
(4 June 1969)

BY

GORDON L. DUNAWAY

ATMOSPHERIC SCIENCES OFFICE
WHITE SANDS MISSILE RANGE, NEW MEXICO



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DA Task 1T665702D127-02

ATMOSPHERIC SCIENCES OFFICE
WHITE SANDS MISSILE RANGE, NEW MEXICO

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ABSTRACT

Meteorological data gathered for the launching of Nike-Hydac STV-86 are presented for the Space and Missile Systems Organization, AFMDC, Holloman Air Force Base, New Mexico, and for ballistic studies. The data appear, along with calculated ballistic data, in tabular form.

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INTRODUCTION

Nike-Hydac STV-86 was launched from Launch Complex-33, L-314, White Sands Missile Range (WSMR), New Mexico, at 1000 hours MDT, 4 June 1969.

Meteorological data used in conjunction with theoretical calculations to predict rocket impact were collected by the Meteorological Support Technical Area, Atmospheric Sciences Office (ASO), WSMR, New Mexico. The Ballistics Meteorologist for this firing was Gordon L. Dunaway.

DISCUSSION

Wind data for the first 216 feet above the surface were obtained from a system composed of five Aerovanes mounted on a 200-foot tower and cabled to component wind indicators.

From 216 to 4,160 feet above the surface, wind data were obtained from T-9 Radar tracked ascents.

Temperature, pressure, and humidity data, along with upper wind data from 4,160 to 75,700 feet above the surface, were obtained from standard rawinsonde observations.

Mean wind component values in each ballistic zone were determined from vertical cross sections by the equal-area method.

Theoretical rocket performance values and ballistic factors as a function of altitude were provided by ASO and are the basis for data appearing in Table I.

PAYLOAD		210.0	Pounds
CORIOLIS DISPLACEMENT	WEST	4.9	Miles
SECOND-STAGE IGNITION	TIME	20.0	Seconds
	ALTITUDE	35,530	Feet MSL
PEAK	TIME	236	Seconds
	ALTITUDE	714,500	Feet MSL
UNIT WIND EFFECT	HEAD	2.16	Miles/MPH
	CROSS	2.24	Miles/MPH
	TAIL	2.18	Miles/MPH
TOWER TILT EFFECT		15.2	Miles/Degree

TABLE I. THEORETICAL ROCKET PERFORMANCE VALUES
NIKE-HYDAC STV-86

LAYERS IN FEET ABOVE GROUND	BALLISTIC FACTORS
11- 60	.135
60- 108	.075
108- 148	.070
148- 184	.031
184- 216	.029
216- 300	.052
300- 400	.048
400- 600	.082
600- 800	.058
800-1000	.039

LAYERS IN FEET ABOVE GROUND	BALLISTIC FACTORS
1000- 1400	.071
1400- 2000	.065
2000- 2500	.031
2500- 3000	.027
3000- 3500	.010
3500- 4160	.009
4160-11000	-.024
11000-16000	-.018
16000-21000	-.018
21000-26000	-.012

LAYERS IN FEET ABOVE GROUND	BALLISTIC FACTORS
26000-31530	-.012
31530-36000	.132
36000-41000	.058
41000-46000	.032
46000-56000	.018
56000-66000	.011
66000-75700	.001

TABLE II. BALLISTIC FACTORS
NIKE-HYDAC STV-86

AERO- VANE NO. *	MEAN WIND COMPONENTS IN MILES PER HOUR									
	1 0830 MDT		2 0900 MDT		3 0915 MDT		4 0930 MDT		5 0940 MDT	
	N-S	E-W	N-S	E-W	N-S	E-W	N-S	E-W	N-S	E-W
1	0.0	0.0	3.0N	2.0E	0.0	0.0	0.0	0.0	1.0N	3.0E
2	0.0	0.0	2.0	3.0	0.0	0.0	0.0	0.0	1.0	4.0
3	0.0	0.0	2.0	4.0	0.0	0.0	1.0S	2.0E	0.0	5.0
4	0.0	0.0	2.0	4.0	0.0	0.0	1.0	2.0	0.0	4.0
5	0.0	0.0	0.0	3.0	0.0	0.0	2.0	2.0	1.0N	2.0

AERO- VANE NO. *	MEAN WIND COMPONENTS IN MILES PER HOUR									
	6 0950 MDT		7 1000 MDT							
	N-S	E-W	N-S	E-W	N-S	E-W	N-S	E-W	N-S	E-W
1	2.0S	1.0E	1.0S	2.0E						
2	2.0	1.0	1.0	2.0						
3	1.0	3.0	1.0	3.0						
4	2.0	3.0	2.0	4.0						
5	2.0	2.0	2.0	2.0						

TABLE III. ANEMOMETER WIND SPEED AND DIRECTION
NIKE-HYDAC STV-86

* Heights corresponding to Aerovane Numbers: 1 = 35 Feet 3 = 128 Feet 5 = 200 Feet
2 = 88 Feet 4 = 168 Feet

LAYERS IN FEET ABOVE GROUND	MEAN WIND COMPONENTS IN MILES PER HOUR													
	1		2		3		4		5		6		7	
	0830 MDT		0900 MDT		0915 MDT		0930 MDT		0940 MDT		0950 MDT		1000 MDT	
	N-S	E-W	N-S	E-W	N-S	E-W	N-S	E-W	N-S	E-W	N-S	E-W	N-S	E-W
216- 300	0.5S	0.5W	0.5S	3.0E	0.5S	0.5E	2.5S	1.5E	0.5N	2.0E	2.5S	1.0E	3.0S	1.5E
300- 400	2.0	1.0	1.5	3.0	1.0	3.0	4.0	1.5	2.0S	2.5	5.5	0.5	6.0	1.0
400- 600	0.0	1.0E	1.5	3.5	2.5	3.5	4.0	1.5	4.0	4.0	5.5	0.0	4.0	1.0
600- 800	0.0	1.5	0.0	3.5	3.5	4.0	2.0	2.0	3.5	5.5	3.5	0.5W	3.5	3.0
800-1000	1.0N	3.5	0.5N	5.0	3.0	4.0	1.0	2.5	0.0	3.0	4.0	1.5E	2.0	5.0
1000-1400	1.0	3.0	1.0S	3.0	1.5	2.0	0.5	2.0	0.5S	6.0	4.0	1.5	4.0	5.0
1400-2000	0.5	2.5	2.0N	1.5	0.0	3.5	1.5	5.5	1.5	8.5	1.0	6.0	3.0	6.0
2000-2500	0.5	4.0	4.5	3.5	1.0N	5.0	2.0N	6.0	2.5N	4.5	1.5N	8.0	0.0	6.5
2500-3000	2.0	6.0	3.5	7.0	5.0	7.0	3.5	6.5	2.0	3.5	1.0	6.0	2.0N	8.0
3000-3500	0.5	8.0	2.0	5.5	2.0	5.5	2.0	5.0	0.0	2.0	0.0	4.0	0.0	4.5
3500-4160	1.5S	7.5	0.0	5.0	0.5	5.0	1.0	6.0	3.0N	2.5	0.5N	3.5	3.0N	3.0

TABLE IV. PILOT-BALLOON-MEASURED WIND DATA
NIKE-HYDAC STV-86

LAYERS IN FEET ABOVE GROUND	MEAN WIND COMPONENTS IN KNOTS					
	10700 MFT		10000 MFT			
	N-S	E-W	N-S	E-W	N-S	E-W
1000-11000	9.5H	5.5H	5.0H	9.5H		
11000-16000	9.0	13.5	0.5H	12.0		
16000-21000	5.5	2.0H	0.0	2.5		
21000-26000	2.5	15.0	1.0H	5.5H		
26000-31530	0.0	29.0	4.0	26.5		
31530-36000	9.0H	50.0	8.0	44.5		
36000-41000	14.0	50.0	10.5	45.5		
41000-46000	13.5	37.5	13.0	36.0		
46000-56000	6.0	16.0	6.0	16.5		
56000-66000	6.0	3.5H	1.0H	2.5H		
66000-75700	4.5	8.0	2.0	11.0		

TABLE V. RAWINSONDE-MEASURED WIND DATA
NIKE-HYDAC 8TV-06

STATION ALTITUDE 3989.00 FEET MSL
4 JUNE 69 0700 HRS EDT
ASCENSION IJ. 569

UPPER AIR DATA
0805003901
WHITE SANDS

WSTM SITE COORDINATES
488580.00FEET E
185045.00FEET N

TABLE VI

GEOMETRIC ALTITUDE MSL FEET	PRESSURE MILLIBARS	TEMPERATURE		REL. HUM. PERCENT	DENSITY GM/CUBIC METER	SPEED OF SOUND KNOTS	WIND DATA		INDEX OF REFRACTION
		AIR DEGREES	DEWPOINT CENTIGRADE				DIRECTION DEGREES(TN)	SPEED KNOTS	
3989.0	880.2	14.6	9.3	70.0	1060.5	662.2	300.0	1.9	1.000290
4000.0	879.9	14.7	9.3	69.9	1059.7	662.3	300.9	2.0	1.000290
4500.0	864.2	16.7	10.2	65.2	1033.4	664.7	342.9	3.5	1.000286
5000.0	848.8	16.0	9.0	62.9	1017.5	663.8	24.8	5.1	1.000279
5500.0	833.6	15.3	7.9	60.7	1001.9	663.0	66.8	6.6	1.000271
6000.0	818.7	14.7	6.7	58.5	986.5	662.1	106.5	8.1	1.000265
6500.0	804.1	14.0	5.5	56.3	971.4	661.3	104.3	8.2	1.000258
7000.0	789.7	13.4	4.3	54.0	956.5	660.4	101.1	7.9	1.000251
7500.0	775.6	12.7	3.1	51.8	941.8	659.6	95.1	6.6	1.000245
8000.0	761.7	12.1	1.9	49.6	927.3	658.7	84.2	5.2	1.000239
8500.0	748.1	11.4	0.6	47.3	913.1	657.9	66.1	3.8	1.000233
9000.0	734.6	10.6	-0.6	45.8	899.4	656.9	44.1	3.7	1.000228
9500.0	721.1	9.5	-1.7	45.3	886.4	655.5	19.2	4.6	1.000223
10000.0	707.8	8.4	-2.9	44.9	873.6	654.2	20.5	6.3	1.000218
10500.0	694.8	7.3	-4.0	44.4	861.0	652.9	26.7	8.2	1.000214
11000.0	682.1	6.2	-5.1	43.9	848.6	651.6	27.8	10.1	1.000209
11500.0	669.5	5.2	-6.3	43.5	836.4	650.3	29.5	11.9	1.000205
12000.0	657.2	4.1	-7.4	43.0	824.3	649.0	33.1	13.5	1.000201
12500.0	645.2	3.0	-8.5	42.5	812.5	647.7	36.8	15.0	1.000197
13000.0	633.3	1.9	-9.7	42.1	800.8	646.4	40.7	16.4	1.000193
13500.0	621.2	0.7	-10.8	41.9	789.1	644.9	45.2	17.8	1.000189
14000.0	609.3	-0.5	-12.0	41.8	777.5	643.4	50.1	19.2	1.000186
14500.0	597.6	-1.8	-13.1	41.8	766.1	641.9	53.6	20.2	1.000182
15000.0	586.1	-3.0	-14.3	41.7	754.9	640.4	56.8	21.1	1.000179
15500.0	574.8	-4.3	-15.4	41.6	743.9	638.9	59.2	22.1	1.000175
16000.0	563.8	-5.5	-16.6	41.5	733.1	637.4	61.6	23.0	1.000172
16500.0	552.9	-6.7	-17.7	41.4	722.4	635.9	63.5	22.8	1.000169
17000.0	542.3	-8.0	-18.9	41.4	711.9	634.4	65.3	22.3	1.000166
17500.0	531.9	-9.2	-20.1	41.3	701.5	632.9	66.6	20.4	1.000163
18000.0	521.7	-10.5	-21.2	41.2	691.3	631.3	68.1	18.2	1.000160

STATION ALTITUDE 2000 FEET MSL
4 JUNE 69 0700 HRS MDT
ASCENSION NO. 569

UPPER AIR DATA
0805003901
WHITE SANDS

WSM SITE COORDINATES
488580.00FEET E
185045.00FEET N

TABLE VII

GEOMETRIC ALTITUDE MSL FEET	PRESSURE MILLIBARS	AIR TEMPERATURE DEGREES	DEWPOINT CENTIGRADE	REL. HUM. PERCENT	DENSITY GM/CUBIC METER	SPEED OF SOUND KNOTS	WIND DATA DIRECTION (TN) DEGREES	SPEED KNOTS	INDEX OF REFRACTION
18500.0	511.6	-11.7	-22.4	41.1	681.3	629.8	70.5	15.0	1.000157
19000.0	501.8	-12.9	-23.5	41.0	671.4	628.3	69.7	12.0	1.000155
19500.0	491.9	-14.0	-24.1	42.4	660.8	627.1	61.3	9.3	1.000152
20000.0	482.0	-14.9	-24.5	44.3	649.9	625.9	50.3	7.3	1.000150
20500.0	472.4	-15.9	-24.9	46.3	639.3	624.8	34.9	6.2	1.000147
21000.0	462.9	-16.8	-25.3	48.2	628.8	623.6	16.1	5.7	1.000145
21500.0	453.7	-17.7	-25.7	50.2	618.5	622.5	353.9	6.0	1.000142
22000.0	444.6	-18.7	-26.2	52.1	608.4	621.3	336.6	6.1	1.000140
22500.0	435.7	-19.6	-26.7	53.9	598.4	620.2	324.1	6.0	1.000137
23000.0	426.8	-20.7	-28.2	51.5	588.8	618.8	313.1	6.3	1.000135
23500.0	418.1	-21.8	-29.7	49.1	579.2	617.5	304.1	7.1	1.000132
24000.0	409.5	-22.9	-31.3	46.7	569.9	616.1	296.0	8.0	1.000130
24500.0	401.2	-23.9	-32.8	44.3	560.7	614.8	289.4	9.1	1.000127
25000.0	392.7	-25.2	-34.2	43.3	551.7	613.2	283.5	10.6	1.000125
25500.0	384.3	-26.6	-35.6	42.6	542.9	611.5	278.3	12.5	1.000123
26000.0	376.1	-27.9	-37.1	41.8	534.3	609.8	275.4	14.1	1.000121
26500.0	368.1	-29.2	-38.5	41.0	525.8	608.2	273.6	15.7	1.000118
27000.0	360.3	-30.6	-39.9	40.3	517.4	606.5	272.5	16.2	1.000116
27500.0	352.6	-31.9	-41.3	39.5	509.2	604.8	271.5	16.4	1.000114
28000.0	345.1	-33.2	-42.7	38.7	501.2	603.2	272.9	17.0	1.000113
28500.0	337.8	-34.6	-44.1	38.0	493.3	601.5	274.8	17.6	1.000111
29000.0	330.6	-35.9	-45.5	37.2	485.5	599.8	276.6	18.0	1.000109
29500.0	323.6	-37.2	-46.9	36.4	477.8	598.1	278.3	18.2	1.000107
30000.0	316.7	-38.6	-48.3	35.6	470.3	596.4	281.0	18.8	1.000105
30500.0	309.9	-39.8	-49.7	34.4**	462.7	594.8	284.0	19.5	1.000104
31000.0	303.0	-40.7	-51.5	30.7**	454.1	593.7	283.4	19.6	1.000101
31500.0	296.2	-41.6	-53.4	27.0**	445.6	592.6	281.6	19.6	1.000100
32000.0	289.6	-42.4	-55.3	23.3**	437.3	591.5	278.3	21.8	1.000098
32500.0	283.1	-43.3	-57.5	19.7**	429.1	590.3	274.5	24.8	1.000096
33000.0	276.8	-44.2	-59.8	16.0**	421.1	589.2	272.0	28.1	1.000094

** AT LEAST ONE ASSUMED RELATIVE HUMIDITY VALUE WAS USED IN THE INTERPOLATION.

STATION ALTITUDE 3985.00 FEET MSL
4 JUNE 69 0700 HRS NDT
ASCENSION NO. 569

UPPER AIR DATA
0805003901
WHITE SANDS

ASTM SITE COORDINATES
488580.00FEET E
185045.00FEET N

TABLE VII (Cont)

GEOMETRIC ALTITUDE MSL FEET	PRESSURE MILLIBARS	TEMPERATURE		REL. HUM. PERCENT	DENSITY GM/CUBIC METER	SPEED OF SOUND		WIND DATA DIRECTION DEGREES(TN)	SPEED KNOTS	INDEX OF REFRACTION
		AIR DEGREES	DEWPOINT CENTIGRADE			KNOTS	KNOTS			
33500.0	270.6	-45.0	-62.6	12.3**	413.3	588.1		270.2	31.6	1.000092
34000.0	264.5	-45.9	-65.9	8.6**	405.6	587.0		269.6	35.4	1.000090
34500.0	258.6	-46.8	-70.5	4.9**	398.0	585.9		269.9	39.4	1.000089
35000.0	252.8	-47.6	-80.3	1.2**	390.6	594.8		270.5	42.8	1.000087
35500.0	247.1	-48.3	0.	-0.4*	382.8	583.9		271.7	44.8	1.000085
36000.0	241.3	-48.8	0.	-0.4*	374.9	583.2		272.9	46.7	1.000083
36500.0	235.8	-49.4	0.	-0.4*	367.1	582.5		273.9	48.4	1.000082
37000.0	230.3	-49.9	0.	-0.4*	359.5	581.7		275.0	50.2	1.000080
37500.0	225.0	-50.5	0.	-0.4*	352.1	581.0		276.2	51.6	1.000078
38000.0	219.8	-51.0	0.	-0.4*	344.8	580.3		277.5	52.9	1.000077
38500.0	214.7	-51.6	0.	-0.4*	337.7	579.6		278.9	53.9	1.000075
39000.0	209.8	-52.2	0.	-0.4*	330.7	578.8		280.6	54.3	1.000074
39500.0	204.9	-52.7	0.	-0.4*	323.9	578.1		282.2	54.8	1.000072
40000.0	200.2	-53.3	0.	-0.4*	317.2	577.4		283.3	55.5	1.000071
40500.0	195.5	-53.8	0.	-0.4*	310.6	576.7		284.4	56.3	1.000069
41000.0	191.0	-54.4	0.	-0.4*	304.2	575.9		285.1	56.2	1.000068
41500.0	186.6	-54.9	0.	-0.4*	297.9	575.2		285.9	56.0	1.000066
42000.0	182.2	-56.0	0.	-0.4*	292.3	573.8		286.4	55.6	1.000065
42500.0	177.9	-57.2	0.	-0.4*	287.0	572.3		286.6	54.9	1.000064
43000.0	173.7	-58.3	0.	-0.4*	281.7	570.7		286.8	54.1	1.000063
43500.0	169.6	-57.3	0.	-0.4*	273.7	572.1		286.3	52.6	1.000061
44000.0	165.5	-56.6	0.	-0.4*	266.4	572.9		285.7	51.0	1.000059
44500.0	161.6	-57.3	0.	-0.4*	260.9	572.0		285.0	49.8	1.000058
45000.0	157.7	-58.0	0.	-0.4*	255.4	571.1		284.2	48.9	1.000057
45500.0	154.0	-58.7	0.	-0.4*	250.1	570.2		283.6	48.1	1.000056
46000.0	150.3	-59.4	0.	-0.4*	244.9	569.3		283.3	47.4	1.000055
46500.0	146.7	-60.1	0.	-0.4*	239.9	568.4		283.3	46.7	1.000053
47000.0	143.2	-60.8	0.	-0.4*	234.9	567.5		285.2	46.4	1.000052
47500.0	139.8	-61.4	0.	-0.4*	230.0	566.6		287.1	46.1	1.000051
48000.0	136.4	-61.3	0.	-0.4*	224.3	566.7		288.9	44.2	1.000050

** AT LEAST ONE ASSUMED RELATIVE HUMIDITY VALUE WAS USED IN THE INTERPOLATION.

STATION ALTITUDE 3989.00 FEET MSL.
4 JUNE 69 0700 HRS MDT
ASCENSION NO. 569

UPPER AIR DATA
0805003901
WHITE SANDS

WSTM SITE COORDINATES
488580.00FEET E
185045.00FEET N

TABLE VII (Cont)

GEOMETRIC ALTITUDE MSL FEET	PRESSURE MILLIBARS	TEMPERATURE AIR DEGREES CENTIGRADE	REL.HUM. PERCENT	DENSITY GM/CUBIC METER	SPEED OF SOUND KNOTS	WIND DATA DIRECTION DEGREES(TN)	SPEED KNOTS	INDEX OF REFRACTION
48500.0	133.1	-61.2	-0. **	218.8	566.8	290.7	42.2	1.000049
49000.0	129.9	-61.2	-0. **	213.5	566.9	291.4	40.4	1.000048
49500.0	126.8	-61.1	-0. **	208.2	567.0	291.7	38.7	1.000046
50000.0	123.7	-61.0	-0. **	203.2	567.1	292.2	36.5	1.000045
50500.0	120.7	-61.4	-0. **	198.6	566.6	293.0	33.9	1.000044
51000.0	117.8	-61.8	-0. **	194.1	566.1	293.6	31.7	1.000043
51500.0	114.9	-62.2	-0. **	189.7	565.6	294.0	30.4	1.000042
52000.0	112.1	-62.5	-0. **	185.5	565.1	294.4	29.2	1.000041
52500.0	109.4	-62.9	-0. **	181.3	564.6	296.9	27.8	1.000040
53000.0	106.7	-63.3	-0. **	177.2	564.1	300.2	26.4	1.000039
53500.0	104.1	-63.7	-0. **	173.2	563.6	303.5	24.9	1.000038
54000.0	101.6	-64.1	-0. **	169.3	563.0	305.2	23.6	1.000037
54500.0	99.1	-64.6	-0. **	165.6	562.4	306.7	22.3	1.000036
55000.0	96.7	-65.3	-0. **	162.0	561.4	308.0	20.9	1.000035
55500.0	94.3	-66.0	-0. **	158.6	560.4	308.5	18.9	1.000035
56000.0	92.0	-66.7	-0. **	155.2	559.4	309.0	17.0	1.000035
56500.0	89.7	-67.5	-0. **	151.9	558.5	305.2	15.5	1.000034
57000.0	87.5	-67.9	-0. **	148.5	557.9	299.2	14.3	1.000033
57500.0	85.3	-67.3	-0. **	144.4	558.6	294.8	13.1	1.000032
58000.0	83.2	-66.8	-0. **	140.5	559.4	292.8	11.9	1.000031
58500.0	81.2	-66.2	-0. **	136.7	560.1	290.9	10.8	1.000030
59000.0	79.2	-65.7	-0. **	133.0	560.8	289.7	10.9	1.000030
59500.0	77.2	-65.1	-0. **	129.4	561.6	288.5	11.0	1.000029
60000.0	75.3	-64.6	-0. **	125.9	562.3	288.9	10.8	1.000028
60500.0	73.5	-64.1	-0. **	122.4	563.0	289.8	10.5	1.000027
61000.0	71.7	-63.5	-0. **	119.1	563.8	290.4	10.0	1.000027
61500.0	69.9	-63.0	-0. **	115.9	564.5	290.1	9.0	1.000026
62000.0	68.2	-62.8	-0. **	113.0	564.7	289.8	8.1	1.000025
62500.0	66.6	-62.6	-0. **	110.2	565.0	310.4	6.0	1.000025
63000.0	64.9	-62.4	-0. **	107.4	565.2	334.5	3.8	1.000024

** AT LEAST ONE ASSUMED RELATIVE HUMIDITY VALUE WAS USED IN THE INTERPOLATION.

STATION ALTITUDE 3989.00 FEET MSL

4 JUNE 69

ASCENSION NJ. 567

UPPER AIR DATA

0805003901

WHITE SANDS

WSTM SITE COORDINATES

488580.00FEET E

185045.00FEET N

TABLE VII (Cont)

GEOMETRIC ALTITUDE MSL FEET	PRESSURE MILLIBARS	TEMPERATURE AIR DEGREES CENTIGRADE	REL. HUM. PERCENT	DENSITY GM/CUBIC METER	SPEED OF SOUND KNOTS	WIND DATA		INDEX OF REFRACTION
						DIRECTION DEGREES(TN)	SPEED KNOTS	
63500.0	63.4	-62.3	-0. **	104.7	565.5	4.0	3.6	1.000023
64000.0	61.8	-62.1	-0. **	102.1	565.7	40.2	5.9	1.000023
64500.0	60.3	-61.9	-0. **	99.5	565.9	71.5	8.0	1.000022
65000.0	58.9	-61.7	-0. **	97.0	566.2	77.9	9.9	1.000022
65500.0	57.5	-61.4	-0. **	94.6	566.5	84.2	11.7	1.000021
66000.0	56.1	-61.1	-0. **	92.2	567.1	89.6	11.4	1.000021
66500.0	54.8	-60.7	-0. **	89.8	567.6	94.8	10.8	1.000020
67000.0	53.5	-60.3	-0. **	87.5	568.1	101.6	10.0	1.000019
67500.0	52.2	-59.9	-0. **	85.3	568.7	109.2	9.2	1.000019
68000.0	51.0	-59.5	-0. **	83.1	569.2	111.6	8.0	1.000019
68500.0	49.8	-59.1	-0. **	81.0	569.7	102.8	6.2	1.000018
69000.0	48.6	-58.7	-0. **	79.0	570.2	94.1	4.5	1.000018
69500.0	47.5	-58.3	-0. **	77.0	570.8	85.8	4.0	1.000017
70000.0	46.3	-57.9	-0. **	75.0	571.3	77.8	4.4	1.000017
70500.0	45.2	-57.5	-0. **	73.1	571.8	69.8	4.7	1.000016
71000.0	44.2	-57.1	-0. **	71.2	572.3	63.1	5.1	1.000016
71500.0	43.1	-56.7	-0. **	69.4	572.8	57.4	5.5	1.000015
72000.0	42.1	-56.3	-0. **	67.7	573.4	51.6	5.9	1.000015
72500.0	41.1	-55.9	-0. **	66.0	573.9	52.6	6.3	1.000015
73000.0	40.1	-55.5	-0. **	64.3	574.4	59.1	6.6	1.000014
73500.0	39.2	-55.1	-0. **	62.6	574.9	65.5	6.9	1.000014
74000.0	38.3	-54.7	-0. **	61.1	575.4	66.8	8.4	1.000014
74500.0	37.4	-54.4	-0. **	59.5	576.0	63.0	11.3	1.000013
75000.0	36.5	-54.0	-0. **	58.0	576.5	59.2	14.2	1.000013
75500.0	35.6	-53.6	-0. **	56.5	577.0	59.9	15.7	1.000013
76000.0	34.8	-53.2	-0. **	55.1	577.5	65.9	15.5	1.000012
76500.0	34.0	-52.8	-0. **	53.7	578.0	71.9	15.3	1.000012
77000.0	33.2	-52.4	-0. **	52.3	578.6	76.9	15.6	1.000012
77500.0	32.4	-52.2	-0. **	51.1	578.7	80.4	16.6	1.000011
78000.0	31.6	-52.2	-0. **	49.9	578.8	84.0	17.6	1.000011

** AT LEAST ONE ASSUMED RELATIVE HUMIDITY VALUE WAS USED IN THE INTERPOLATION.

STATION ALTITUDE 3989.00 FEET MSI

4 JUNE 69

ASCENSION NO. 569

UPPER AIR DATA

0805003901

WHITE SANDS

WSTM SITE COORDINATES

488580.00FEET E

185045.00FEET N

TABLE VII (Cont)

GEOMETRIC ALTITUDE MSL FEET	PRESSURE MILLIBARS	TEMPERATURE AIR DEGREES	TEMPERATURE DEWPOINT CENTIGRADE	REL. HUM. PERCENT	DENSITY GM/CUBIC METER	SPEED OF SOUND KNOTS	WIND DATA DIRECTION (TN) DEGREES	SPEED KNOTS	INDEX OF REFRACTION
78500.0	30.9	-52.1	0.	-0.	48.7	579.0	90.1	18.0	1.000011
79000.0	30.2	-52.0	0.	-0.	47.6	579.1	100.5	17.3	1.000011
79500.0	29.5	-51.9	0.	-0.	46.5	579.2	111.0	16.5	1.000010
80000.0	28.8	-51.8	0.	-0.	45.4	579.3	116.7	16.3	1.000010
80500.0	28.2	-51.8	0.	-0.	44.3	579.4	113.1	16.8	1.000010
81000.0	27.5	-51.7	0.	-0.	43.3	579.5	109.6	17.4	1.000010
81500.0	26.9	-51.6	0.	-0.	42.3	579.6	108.1	17.8	1.000009
82000.0	26.3	-51.5	0.	-0.	41.3	579.7	111.1	17.7	1.000009
82500.0	25.7	-51.4	0.	-0.	40.3	579.8	114.2	17.6	1.000009
83000.0	25.1	-51.4	0.	-0.	39.4	579.9	116.3	17.5	1.000009
83500.0	24.5	-51.3	0.	-0.	38.5	580.0	115.8	17.1	1.000009
84000.0	23.9	-51.2	0.	-0.	37.6	580.1	115.3	16.8	1.000008
84500.0	23.4	-51.1	0.	-0.	36.7	580.2	114.3	16.5	1.000008
85000.0	22.8	-51.0	0.	-0.	35.8	580.3	111.7	16.3	1.000008
85500.0	22.3	-50.9	0.	-0.	35.0	580.4	109.2	16.0	1.000008
86000.0	21.8	-50.9	0.	-0.	34.2	580.5	106.3	15.6	1.000008
86500.0	21.3	-50.8	0.	-0.	33.4	580.6	102.0	14.9	1.000007
87000.0	20.8	-50.7	0.	-0.	32.6	580.7	97.7	14.2	1.000007
87500.0	20.3	-50.6	0.	-0.	31.8	580.8	93.6	13.8	1.000007
88000.0	19.9	-50.5	0.	-0.	31.1	580.9	90.2	14.7	1.000007
88500.0	19.4	-50.5	0.	-0.	30.4	581.1	86.8	15.5	1.000007
89000.0	19.0	-50.4	0.	-0.	29.7	581.2	83.8	16.2	1.000007
89500.0	18.5	-50.3	0.	-0.	29.0	581.3	83.0	15.7	1.000006
90000.0	18.1	-49.8	0.	-0.	28.3	581.9	82.2	15.3	1.000006
90500.0	17.7	-49.3	0.	-0.	27.6	582.6	81.3	14.8	1.000006
91000.0	17.3	-48.8	0.	-0.	26.9	583.3	78.6	15.0	1.000006
91500.0	16.9	-48.2	0.	-0.	26.2	584.0	76.0	15.1	1.000006
92000.0	16.6	-47.7	0.	-0.	25.6	584.6	73.3	15.2	1.000006
92500.0	16.2	-47.2	0.	-0.	25.0	585.3	71.4	16.1	1.000006
93000.0	15.8	-46.7	0.	-0.	24.4	586.0	69.6	16.9	1.000005

** AT LEAST ONE ASSUMED RELATIVE HUMIDITY VALUE WAS USED IN THE INTERPOLATION.

STATION ALTITUDE 3989.00 FEET MSL

4 JUNE 69

ASCENSION VO. 569

UPPER AIR DATA

0805003901

WHITE SANDS

WSTM SITE COORDINATES

488580.00FEET E

185045.00FEET N

GEOMETRIC ALTITUDE MSL FEET	PRESSURE MILLIBARS	TEMPERATURE		REL. HUM. PERCENT	DENSITY GM/CUBIC METER	SPEED OF SOUND KNOTS	WIND DATA		INDEX OF REFRACTION
		AIR DEGREES	DEWPOINT CENTIGRADE				DIRECTION DEGREES(TN)	SPEED KNOTS	
93500.0	15.5	-46.1	0°	-0. **	23.8	586.7	67.8	17.8	1.000005
94000.0	15.1	-45.6	0°	-0. **	23.2	587.4	68.2	19.0	1.000005
94500.0	14.8	-45.1	0°	-0. **	22.6	588.0	69.1	20.3	1.000005
95000.0	14.5	-44.6	0°	-0. **	22.1	588.7	70.0	21.6	1.000005
95500.0	14.2	-44.0	0°	-0. **	21.5	589.4	71.5	23.0	1.000005
96000.0	13.8	-43.5	0°	-0. **	21.0	590.1	73.2	24.4	1.000005
96500.0	13.5	-43.0	0°	-0. **	20.5	590.7	74.9	25.9	1.000005
97000.0	13.2	-42.5	0°	-0. **	20.0	591.4	76.8	26.5	1.000004
97500.0	12.9	-41.9	0°	-0. **	19.5	592.1	78.9	26.4	1.000004
98000.0	12.7	-41.4	0°	-0. **	19.0	592.7	81.0	26.1	1.000004
98500.0	12.4	-40.9	0°	-0. **	18.6	593.4	82.4	26.0	1.000004
99000.0	12.1	-40.4	0°	-0. **	18.1	594.1	83.0	25.5	1.000004
99500.0	11.8	-39.8	0°	-0. **	17.7	594.8	83.7	25.0	1.000004
100000.0	11.6	-39.3	0°	-0. **	17.2	595.4	84.5	24.6	1.000004
100500.0	11.3	-38.8	0°	-0. **	16.8	596.1	85.6	24.4	1.000004
101000.0	11.1	-38.3	0°	-0. **	16.4	596.8	86.7	24.1	1.000004
101500.0	10.8	-37.7	0°	-0. **	16.0	597.4	87.8	24.0	1.000004
102000.0	10.6	-37.2	0°	-0. **	15.6	598.1	89.0	24.3	1.000003
102500.0	10.3	-36.7	0°	-0. **	15.2	598.8	90.1	24.7	1.000003
103000.0	10.1	-36.2	0°	-0. **	14.9	599.4	91.2	25.0	1.000003
103500.0	9.9	-35.6	0°	-0. **	14.5	500.2	92.2	25.9	1.000003
104000.0	9.7	-34.9	0°	-0. **	14.2	601.0	93.2	26.7	1.000003
104500.0	9.5	-34.2	0°	-0. **	13.8	601.9	94.1	27.5	1.000003
105000.0	9.3	-33.5	0°	-0. **	13.5	602.7	95.0	27.6	1.000003
105500.0	9.1	-32.9	0°	-0. **	13.2	603.6	95.8	27.6	1.000003
106000.0	8.9	-32.2	0°	-0. **	12.9	604.4	96.6	27.6	1.000003
106500.0	8.7	-31.5	0°	-0. **	12.6	605.3	97.2	27.4	1.000003
107000.0	8.5	-30.8	0°	-0. **	12.3	606.1	97.8	27.1	1.000003
107500.0	8.3	-30.1	0°	-0. **	12.0	607.0	98.4	26.7	1.000003
108000.0	8.2	-29.5	0°	-0. **	11.7	607.8			1.000003

** AT LEAST ONE ASSUMED RELATIVE HUMIDITY VALUE WAS USED IN THE INTERPOLATION.

STATION ALTITUDE 3989.00 FEET MSI
4 JUNE 69 0700 HRS NDT
ASCENSION NO. 509

UPPER AIR DATA
0805003901
WHITE SANDS

WSTM SITE COORDINATES
488500.00FEET E
185045.00FEET N

TABLE VII (Cont)

GEOMETRIC ALTITUDE MSL FEET	PRESSURE MILLIBARS	TEMPERATURE		REL-HUM. PERCENT	DENSITY GM/CUBIC METER	SPEED OF SOUND		WIND DATA		INDEX OF REFRACTION
		AIR DEGREES	DEWPOINT CENTIGRADE			KNOTS	KNOTS	DIRECTION DEGREES(TN)	SPEED KNOTS	
108500.0	8.0	-28.8	0.	-0. **	11.4	608.7				1.000003
109000.0	7.8	-28.1	0.	-0. **	11.1	609.5				1.000002
109500.0	7.7	-27.4	0.	-0. **	10.9	610.4				1.000002
110000.0	7.5	-26.7	0.	-0. **	10.6	611.2				1.000002

** AT LEAST ONE ASSUMED RELATIVE HUMIDITY VALUE WAS USED IN THE INTERPOLATION.

STATION ALTITUDE 3989.00 FEET MSL
4 JUNE 69 0700 HRS NDT
ASCENSION NO. 569

MANDATORY LEVELS
0805003901
WHITE SANDS

WSTM SITE COORDINATES
488580.00FEET E
185045.00FEET N

TABLE VIII

PRESSURE GEOPOTENTIAL		TEMPERATURE		REL. HUM. PERCENT	WIND DATA	
MILLIBARS	FEET	AIR DEGREES	DEWPOINT CENTIGRADE		DIRECTION DEGREES(TN)	SPEED KNOTS
850.0	4964.	16.1	9.1	63.	21.9	5.0
800.0	6651.	13.8	5.2	56.	103.6	8.2
750.0	8430.	11.5	0.8	48.	68.5	4.0
700.0	10311.	7.8	-3.6	45.	24.7	7.5
650.0	12301.	3.4	-8.1	43.	35.3	14.4
600.0	14413.	-1.5	-12.9	42.	53.1	20.0
550.0	16664.	-7.1	-18.1	41.	64.2	22.7
500.0	19076.	-13.2	-23.7	41.	68.1	11.5
450.0	21684.	-18.1	-25.9	51.	344.7	6.2
400.0	24539.	-24.1	-33.0	44.	288.4	9.2
350.0	27683.	-32.4	-41.8	39.	271.9	16.6
300.0	31181.	-41.1	-52.3	29.**	282.6	19.6
250.0	35186.	-48.0	0.	-0.**	271.1	43.8
200.0	39958.	-53.3	0.	-0.**	283.4	55.6
175.0	42754.	-57.9	0.	-0.**	286.7	54.4
150.0	45944.	-59.4	0.	-0.**	283.3	47.3
125.0	49662.	-61.0	0.	-0.**	291.9	37.6
100.0	54178.	-64.3	0.	-0.**	306.1	22.8
80.0	58609.	-65.9	0.	-0.**	290.3	10.9
70.0	61287.	-63.0	0.	-0.**	290.1	9.1
60.0	64409.	-61.9	0.	-0.**	72.8	8.4
50.0	68132.	-59.2	0.	-0.**	105.3	6.7
40.0	72761.	-55.5	0.	-0.**	59.3	6.6
30.0	78839.	-52.0	0.	-0.**	103.4	17.1
25.0	82719.	-51.3	0.	-0.**	116.2	17.4
20.0	87484.	-50.6	0.	-0.**	91.2	14.4
15.0	93693.	-45.4	0.	-0.**	68.4	19.3
10.0	102753.	-35.9	0.	-0.**	91.7	25.5

** AT LEAST ONE ASSUMED RELATIVE HUMIDITY VALUE WAS USED IN THE INTERPOLATION.

SIGNIFICANT LEVEL DATA
0805003902
WHITE SANDS

WSTM SITE COORDINATES
488580.00FEET E
185045.00FEET N

STATION ALTITUDE 3989.00 FEET MSL
4 JUNE 69 1000 HRS MDT
ASCENSION NO. 570

TABLE IC

PRESSURE GEOMETRIC ALTITUDE		TEMPERATURE AIR DEWPOINT		REL.HUM. PERCENT
MILLIBARS	MSL FEET	DEGREES	CENTIGRADE	
981.0	3989.0	22.3	8.8	42.0
843.0	5236.3	17.2	4.6	43.0
715.0	9787.3	9.4	-4.2	38.0
626.0	13353.9	1.0	-14.7	30.0
559.0	16302.4	-6.7	-17.0	44.0
544.0	16998.9	-8.1	-25.7	23.0
530.0	17663.4	-9.1	-24.8	27.0
516.0	18341.9	-11.1	-21.8	41.0
514.0	18440.0	-11.3	-16.8	64.0
500.0	19135.7	-12.3	-22.1	44.0
488.0	19744.9	-13.5	-26.4	33.0
463.0	21055.4	-15.6	-26.8	38.0
400.0	24617.8	-25.2	-34.0	44.0
378.0	25963.1	-27.6	-43.8	20.0
336.0	28711.3	-34.5	-49.3	21.0
299.0	31355.9	-41.5	0.	-0. **
236.0	36554.0	-49.1	0.	-0. **
205.0	39574.5	-52.5	0.	-0. **
181.0	42193.0	-57.9	0.	-0. **
100.0	54250.5	-67.3	0.	-0. **
50.0	68376.1	-57.2	0.	-0. **
45.0	70574.1	-57.9	0.	-0. **
32.0	77781.7	-51.5	0.	-0. **
23.0	84915.4	-48.7	0.	-0. **
14.0	95918.2	-40.2	0.	-0. **
11.0	101387.0	-38.6	0.	-0. **
10.0	103579.1	-33.8	0.	-0. **

** RELATIVE HUMIDITY NOT SUPPLIED. ZERO VALUE ASSUMED FOR COMPUTATIONS.

STATION ALTITUDE 3000 00 FEET MSL
4 JUNE 69 1000 HRS MDT
ASCENSION NO. 570

UPPER AIR DATA
0805003902
WHITE SANDS

WSM SITE COORDINATES
488580.00FEET E
185045.00FEET N

TABLE X

GEOMETRIC ALTITUDE MSL FEET	PRESSURE MILLIBARS	TEMPERATURE AIR DEGREES	TEMPERATURE DEWPOINT CENTIGRADE	REL. HUM. PERCENT	DENSITY GM/CUBIC METER	SPEED OF SOUND KNOTS	WIND DATA		INDEX OF REFRACTION
							DIRECTION DEGREES(TN)	SPEED KNOTS	
3989.0	881.0	22.3	8.8	42.0	1033.9	670.9	0.0	0.0	1.000280
4000.0	880.7	22.3	8.8	42.0	1033.7	670.9	0.5	0.0	1.000279
4500.0	865.2	20.2	7.1	42.4	1023.1	668.4	22.2	0.9	1.000272
5000.0	850.1	18.2	5.4	42.8	1012.7	665.9	44.0	1.8	1.000266
5500.0	835.0	16.7	4.0	42.7	999.8	664.2	65.8	2.7	1.000260
6000.0	820.0	15.9	3.1	42.2	985.0	663.2	87.5	3.6	1.000254
6500.0	805.3	15.0	2.1	41.6	970.4	662.1	87.0	4.0	1.000249
7000.0	790.9	14.2	1.2	41.1	956.0	661.1	72.2	4.0	1.000243
7500.0	776.7	13.3	0.2	40.5	941.8	660.0	58.6	4.9	1.000238
8000.0	762.8	12.5	-0.8	40.0	927.8	659.0	45.4	6.0	1.000234
8500.0	749.1	11.6	-1.7	39.4	914.1	658.0	42.3	7.7	1.000229
9000.0	735.7	10.7	-2.7	38.9	900.5	656.9	40.7	9.5	1.000224
9500.0	722.5	9.9	-3.7	38.3	887.2	655.9	43.7	11.3	1.000220
10000.0	709.4	8.9	-4.8	37.5	874.3	654.7	46.5	12.7	1.000215
10500.0	696.3	7.7	-6.3	36.4	861.9	653.2	48.9	12.7	1.000210
11000.0	683.4	6.5	-7.7	35.3	849.7	651.8	51.9	12.5	1.000205
11500.0	670.8	5.4	-9.2	34.2	837.7	650.4	55.9	11.9	1.000202
12000.0	658.4	4.2	-10.7	33.0	825.8	649.0	61.4	11.5	1.000197
12500.0	646.2	3.0	-12.1	31.9	814.2	647.5	67.6	11.3	1.000193
13000.0	634.3	1.8	-13.6	30.8	802.7	646.1	72.7	12.6	1.000190
13500.0	622.5	0.6	-14.7	30.7	791.3	644.6	75.7	13.9	1.000186
14000.0	610.7	-0.7	-15.0	33.1	780.0	643.1	74.6	15.5	1.000184
14500.0	599.1	-2.0	-15.3	35.4	768.8	641.6	72.9	16.8	1.000181
15000.0	587.7	-3.3	-15.7	37.8	757.9	640.0	71.0	17.9	1.000178
15500.0	576.5	-4.6	-16.2	40.2	747.1	638.5	72.0	18.3	1.000176
16000.0	565.5	-5.9	-16.7	42.6	736.5	636.9	73.9	18.2	1.000173
16500.0	554.7	-7.1	-19.1	38.0	725.8	635.4	78.6	16.9	1.000169
17000.0	544.0	-8.1	-25.7	23.0	714.7	634.1	84.9	15.3	1.000163
17500.0	533.4	-8.9	-25.0	26.0	702.8	633.2	93.0	13.4	1.000161
18000.0	523.0	-10.1	-23.1	33.9	692.2	631.8	100.0	11.2	1.000159

STATION ALTITUDE 3989.00 FEET MSL
4 JJNE 69 1000 HRS MDT
ASCENSION NO. 570

UPPER AIR DATA
0805003902
WHITE SANDS

WSIM SITE COORDINATES
488580.00FEET E
185045.00FEET N

TABLE X (Cont)

GEOMETRIC ALTITUDE MSL FEET	PRESSURE MILLIBARS	TEMPERATURE		REL. HUM. PERCENT	DENSITY GM/CUBIC METER	SPEED OF SOUND KNOTS	WIND DATA		INDEX OF REFRACTION
		AIR DEGREES CENTIGRADE	DEWPOINT CENTIGRADE				DIRECTION DEGREES (TN)	SPEED KNOTS	
18500.0	512.8	-11.4	-17.2	62.3	681.7	630.3	106.3	8.7	1.000161
19000.0	502.7	-12.1	-21.0	47.9	670.4	629.4	107.7	7.1	1.000156
19500.0	492.8	-13.0	-24.6	37.4	659.6	628.2	106.9	5.9	1.000152
20000.0	483.0	-13.9	-26.5	34.0	648.8	627.1	98.0	5.4	1.000148
20500.0	473.4	-14.7	-26.6	35.9	637.9	626.1	86.6	5.1	1.000146
21000.0	464.0	-15.5	-26.8	37.8	627.2	625.2	79.0	5.0	1.000144
21500.0	454.6	-16.8	-27.7	38.7	617.6	623.6	72.4	4.8	1.000141
22000.0	445.4	-18.1	-28.7	39.6	608.2	621.9	68.3	4.1	1.000139
22500.0	436.3	-19.5	-29.7	40.4	599.1	620.3	64.9	3.2	1.000137
23000.0	427.5	-20.8	-30.7	41.3	590.0	618.6	53.8	2.4	1.000134
23500.0	418.8	-22.2	-31.7	42.1	581.2	617.0	40.3	1.7	1.000132
24000.0	410.3	-23.5	-32.7	43.0	572.5	615.3	10.6	1.0	1.000130
24500.0	401.9	-24.9	-33.8	43.8	563.9	613.6	336.6	0.4	1.000128
25000.0	393.6	-25.9	-36.4	37.2	554.5	612.4	327.1	0.7	1.000125
25500.0	385.4	-26.8	-39.8	28.3	545.0	611.2	320.7	1.2	1.000123
26000.0	377.4	-27.7	-43.9	20.0	535.6	610.1	298.8	1.5	1.000120
26500.0	369.4	-28.9	-44.9	20.2	527.0	608.5	276.1	1.9	1.000118
27000.0	361.6	-30.2	-45.9	20.4	518.5	606.9	264.1	2.3	1.000116
27500.0	353.9	-31.5	-46.9	20.6	510.1	605.4	252.3	2.8	1.000114
28000.0	346.4	-32.7	-47.9	20.7	501.9	603.8	261.9	3.3	1.000112
28500.0	339.1	-34.0	-48.9	20.9	493.9	602.2	272.1	3.8	1.000110
29000.0	331.7	-35.3	-51.0	18.7**	485.9	600.6	277.9	4.6	1.000109
29500.0	324.5	-36.6	-54.1	14.7**	477.9	598.9	283.2	5.5	1.000107
30000.0	317.4	-37.9	-57.7	10.8**	470.1	597.2	279.0	7.0	1.000105
30500.0	310.5	-39.2	-62.3	6.8**	462.5	595.5	272.1	8.8	1.000103
31000.0	303.7	-40.6	-69.6	2.8**	455.0	593.8	265.7	11.9	1.000101
31500.0	297.0	-41.7	0.	-0. **	447.2	592.4	259.6	15.7	1.000100
32000.0	290.4	-42.4	0.	-0. **	438.5	591.4	257.9	19.9	1.000098
32500.0	283.8	-43.2	0.	-0. **	430.0	590.5	259.4	24.5	1.000096
33000.0	277.4	-43.9	0.	-0. **	421.7	589.6	262.8	28.6	1.000094

** AT LEAST ONE ASSUMED RELATIVE HUMIDITY VALUE WAS USED IN THE INTERPOLATION.

STATION ALTITUDE 3000 M FEET MSL
4 JUNE 69 1000 HRS MDT
AGCEN31JY NJ. 570

UPPER AIR DATA
080500Z3902
WHITE SANDS

WSFM SITE COORDINATES
400500.000E 38
185045.000E 11 N

TABLE X (Cont)

GEOMETRIC ALTITUDE MSL FOOT	PRESSURE MILLIBARS	AIR TEMPERATURE DEGREES CENTIGRADE	REL. HUM. PERCENT	DENSITY GM/CC METER	SPEED OF SOUND KNOTS	WIND DATA DIRECTION DEGREES (T)	SPEED KNOTS	INDEX OF REFRACTION
33500.0	271.2	-44.6	-0.	413.5	580.6	267.0	32.4	1.000092
34000.0	265.1	-45.4	-0.	405.5	507.7	271.9	35.0	1.000090
34500.0	257.1	-46.1	-0.	397.6	506.7	275.3	30.9	1.000089
35000.0	253.3	-46.0	-0.	389.9	505.0	278.1	41.4	1.000087
35500.0	247.6	-47.6	-0.	382.4	504.0	280.0	43.2	1.000085
36000.0	242.0	-48.3	-0.	375.0	503.9	281.3	44.7	1.000084
36500.0	236.6	-49.0	-0.	367.0	502.9	280.9	45.4	1.000082
37000.0	231.1	-49.6	-0.	360.3	502.2	280.6	46.1	1.000080
37500.0	225.0	-50.2	-0.	352.0	501.4	281.1	46.4	1.000079
38000.0	220.6	-50.7	-0.	345.6	500.7	281.5	46.0	1.000077
38500.0	215.5	-51.3	-0.	338.5	500.0	281.9	45.5	1.000075
39000.0	210.6	-51.9	-0.	331.5	579.2	282.2	44.2	1.000074
39500.0	205.7	-52.4	-0.	324.7	578.5	283.0	43.9	1.000072
40000.0	200.9	-53.4	-0.	318.5	577.2	283.9	43.6	1.000071
40500.0	196.2	-54.4	-0.	312.5	575.9	284.5	43.9	1.000070
41000.0	191.6	-55.4	-0.	306.6	574.5	285.0	44.5	1.000068
41500.0	187.1	-56.5	-0.	300.0	573.2	285.0	45.0	1.000067
42000.0	182.7	-57.5	-0.	295.1	571.8	284.3	45.7	1.000066
42500.0	178.3	-58.1	-0.	288.9	571.0	283.8	46.2	1.000064
43000.0	174.0	-58.5	-0.	282.4	570.4	284.4	46.6	1.000063
43500.0	169.7	-58.9	-0.	276.0	569.9	284.9	46.7	1.000061
44000.0	165.6	-59.3	-0.	269.8	569.4	285.6	45.7	1.000060
44500.0	161.6	-59.7	-0.	263.7	568.9	286.2	44.8	1.000059
45000.0	157.6	-60.1	-0.	257.0	568.4	286.1	44.4	1.000057
45500.0	153.0	-60.5	-0.	252.0	567.8	286.0	44.0	1.000056
46000.0	150.1	-60.9	-0.	246.3	567.3	286.2	44.0	1.000055
46500.0	146.4	-61.3	-0.	240.0	566.8	286.4	44.2	1.000054
47000.0	142.9	-61.6	-0.	235.4	566.3	286.7	42.7	1.000052
47500.0	139.4	-62.0	-0.	230.1	565.8	287.0	40.0	1.000051
48000.0	136.0	-62.4	-0.	224.9	565.2	287.8	37.9	1.000050

** AT LEAST ONE ASSUMED RELATIVE HUMIDITY VALUE WAS USED IN THE INTERPOLATION.

UPPER AIR DATA
0805003902
WHITE SANDS

WSTM SITE COORDINATES
488580.00FEET E
185045.00FEET N

STATION ALTITUDE 3000.00 FEET MSL
4 JUNE 69 1000 HRS MDT
ASCENSION NO. 570

TABLE X (Cont)

GEOMETRIC ALTITUDE MSL FEET	PRESSURE MILLIBARS	AIR TEMPERATURE DEGREES CENTIGRADE	REL. HUM. PERCENT	DENSITY GM/CUBIC METER	SPEED OF SOUND KNOTS	WIND DATA DIRECTION DEGREES(TN)	SPEED KNOTS	INDEX OF REFRACTION
48500.0	132.7	-62.8	-0.	219.8	564.7	289.7	37.2	1.000049
49000.0	129.5	-63.2	-0.	214.9	564.2	291.5	36.6	1.000048
49500.0	126.3	-63.6	-0.	210.0	563.7	293.6	34.7	1.000047
50000.0	123.3	-64.0	-0.	205.3	563.1	295.7	32.8	1.000046
50500.0	120.3	-64.4	-0.	200.7	562.6	296.5	31.6	1.000045
51000.0	117.3	-64.8	-0.	196.2	562.1	296.8	30.7	1.000044
51500.0	114.5	-65.2	-0.	191.8	561.6	297.0	29.1	1.000043
52000.0	111.7	-65.5	-0.	187.5	561.0	297.0	26.6	1.000042
52500.0	109.0	-65.9	-0.	183.3	560.5	296.9	24.0	1.000041
53000.0	106.3	-66.3	-0.	179.1	560.0	296.4	21.4	1.000040
53500.0	103.8	-66.7	-0.	175.1	559.5	295.8	18.7	1.000039
54000.0	101.2	-67.1	-0.	171.2	558.9	295.0	17.4	1.000038
54500.0	98.8	-67.1	-0.	167.1	558.9	294.2	16.4	1.000037
55000.0	96.4	-66.8	-0.	162.7	559.4	295.1	15.8	1.000036
55500.0	94.1	-66.4	-0.	158.5	559.9	299.0	15.5	1.000035
56000.0	91.8	-66.0	-0.	154.4	560.4	302.9	15.2	1.000034
56500.0	89.5	-65.7	-0.	150.4	560.8	305.3	14.3	1.000033
57000.0	87.4	-65.3	-0.	146.5	561.3	307.0	13.4	1.000033
57500.0	85.3	-65.0	-0.	142.7	561.8	310.0	12.3	1.000032
58000.0	83.2	-64.6	-0.	139.0	562.3	312.1	11.2	1.000031
58500.0	81.2	-64.3	-0.	135.4	562.8	313.3	9.9	1.000030
59000.0	79.2	-63.9	-0.	131.9	563.3	310.4	7.8	1.000029
59500.0	77.3	-63.5	-0.	128.5	563.7	307.6	5.8	1.000029
60000.0	75.4	-63.2	-0.	125.1	564.2	287.6	4.0	1.000028
60500.0	73.6	-62.8	-0.	121.9	564.7	260.7	2.3	1.000027
61000.0	71.8	-62.5	-0.	118.8	565.2	227.5	1.3	1.000026
61500.0	70.1	-62.1	-0.	115.7	565.7	175.7	2.2	1.000026
62000.0	68.4	-61.8	-0.	112.7	566.1	124.0	3.1	1.000025
62500.0	66.7	-61.4	-0.	109.8	566.6	112.3	5.0	1.000024
63000.0	65.1	-61.0	-0.	106.9	567.1	111.1	7.2	1.000024

** AT LEAST ONE ASSUMED RELATIVE HUMIDITY VALUE WAS USED IN THE INTERPOLATION.

UPPER AIR DATA
0805003902
WHITE SANDS

WSTM SITE COORDINATES
488580.00FEET E
185045.90FEET N

STATION ALTITUDE 3999 70 FEET MSL
4 JUNE 69 1000 HRS MDT
ASCENSION NO. 570

TABLE X (Cont)

GEOMETRIC ALTITUDE MSL FEET	PRESSURE MILLIBARS	TEMPERATURE		REL. HUM. PERCENT	DENSITY GM/CUBIC METER	SPEED OF SOUND		WIND DATA		INDEX OF REFRACTION
		AIR DEGREES	DEWPOINT CENTIGRADE			KNOTS	KNOTS	DIRECTION DEGREES(TN)	SPEED KNOTS	
63500.0	63.5	-60.7	0.	-0.	104.2	567.6	111.7	8.5	1.000023	
64000.0	62.0	-60.3	0.	-0.	101.5	568.0	115.2	8.4	1.000023	
64500.0	60.5	-60.0	0.	-0.	98.8	568.5	118.6	8.3	1.000022	
65000.0	59.0	-59.6	0.	-0.	96.3	569.0	120.3	8.9	1.000021	
65500.0	57.6	-59.3	0.	-0.	93.8	569.5	122.0	9.5	1.000021	
66000.0	56.2	-58.9	0.	-0.	91.4	569.9	117.6	9.3	1.000020	
66500.0	54.8	-58.5	0.	-0.	89.0	570.4	110.2	8.7	1.000020	
67000.0	53.5	-58.2	0.	-0.	86.7	570.9	102.4	8.8	1.000019	
67500.0	52.2	-57.8	0.	-0.	84.5	571.4	93.7	10.7	1.000019	
68000.0	50.9	-57.5	0.	-0.	82.3	571.8	85.1	12.6	1.000018	
68500.0	49.7	-57.2	0.	-0.	80.2	572.1	83.0	13.4	1.000018	
69000.0	48.5	-57.4	0.	-0.	78.4	571.9	81.6	14.2	1.000017	
69500.0	47.4	-57.6	0.	-0.	76.6	571.7	81.2	14.7	1.000017	
70000.0	46.3	-57.7	0.	-0.	74.8	571.5	82.9	15.0	1.000017	
70500.0	45.2	-57.9	0.	-0.	73.1	571.3	84.6	15.2	1.000016	
71000.0	44.1	-57.5	0.	-0.	71.3	571.8	86.7	15.4	1.000016	
71500.0	43.1	-57.1	0.	-0.	69.5	572.4	89.1	15.4	1.000015	
72000.0	42.1	-56.6	0.	-0.	67.7	573.0	91.4	15.5	1.000015	
72500.0	41.1	-56.2	0.	-0.	66.0	573.5	95.3	16.7	1.000015	
73000.0	40.1	-55.7	0.	-0.	64.3	574.1	99.3	17.9	1.000014	
73500.0	39.2	-55.3	0.	-0.	62.7	574.7	102.7	18.9	1.000014	
74000.0	38.3	-54.9	0.	-0.	61.1	575.3	103.9	18.4	1.000014	
74500.0	37.4	-54.4	0.	-0.	59.5	575.9	105.1	18.0	1.000013	
75000.0	36.5	-54.0	0.	-0.	58.0	576.5	107.7	17.7	1.000013	
75500.0	35.6	-53.5	0.	-0.	56.6	577.0	111.8	17.6	1.000013	
76000.0	34.8	-53.1	0.	-0.	55.1	577.6	116.0	17.5	1.000012	
76500.0	34.0	-52.6	0.	-0.	53.7	578.2	115.7	16.1	1.000012	
77000.0	33.2	-52.2	0.	-0.	52.4	578.8	113.7	14.2	1.000012	
77500.0	32.4	-51.8	0.	-0.	51.0	579.4	111.7	12.2	1.000011	
78000.0	31.7	-51.4	0.	-0.	49.8	579.8	112.0	13.0	1.000011	

** AT LEAST ONE ASSUMED RELATIVE HUMIDITY VALUE WAS USED IN THE INTERPOLATION.

STATION ALTITUDE 3989.00 FEET MSL
4 JUNE 69 1000 HRS MDT
ASCENSION NO. 570

UPPER AIR DATA
0805003902
WHITE SANDS

WSTM SITE COORDINATES
488580.00FEET E
185045.00FEET N

TABLE X (Cont)

GEOMETRIC ALTITUDE MSL FEET	PRESSURE MILLIBARS	TEMPERATURE AIR DEGREES CENTIGRADE	REL. HUM. PERCENT	DENSITY GM/CUBIC METER	SPEED OF SOUND KNOTS	WIND DATA DIRECTION DEGREES (TWD)	SPEED KNOTS	INDEX OF REFRACTION
78500.0	31.0	-51.2	-0.0	48.6	580.1	112.4	14.0	1.000011
79000.0	30.2	-51.0	-0.0	47.4	580.3	112.5	14.9	1.000011
79500.0	29.6	-50.8	-0.0	46.3	580.6	110.3	14.2	1.000010
80000.0	28.9	-50.6	-0.0	45.2	580.8	107.8	13.5	1.000010
80500.0	28.2	-50.4	-0.0	44.1	581.1	105.3	12.8	1.000010
81000.0	27.6	-50.2	-0.0	43.1	581.4	103.8	13.2	1.000010
81500.0	26.9	-50.0	-0.0	42.1	581.6	102.4	13.7	1.000009
82000.0	26.3	-49.8	-0.0	41.1	581.9	101.0	14.2	1.000009
82500.0	25.7	-49.6	-0.0	40.1	582.1	102.0	15.5	1.000009
83000.0	25.1	-49.5	-0.0	39.1	582.4	103.3	17.0	1.000009
83500.0	24.6	-49.3	-0.0	38.2	582.6	104.6	18.4	1.000009
84000.0	24.0	-49.1	-0.0	37.3	582.9	102.3	18.1	1.000008
84500.0	23.4	-48.9	-0.0	36.4	583.1	99.4	17.5	1.000008
85000.0	22.9	-48.6	-0.0	35.6	583.4	96.5	16.9	1.000008
85500.0	22.4	-48.2	-0.0	34.7	583.9	94.5	17.0	1.000008
86000.0	21.9	-47.9	-0.0	33.9	584.4	92.9	17.2	1.000008
86500.0	21.4	-47.5	-0.0	33.1	584.9	91.2	17.5	1.000007
87000.0	20.9	-47.1	-0.0	32.3	585.4	86.3	17.1	1.000007
87500.0	20.5	-46.7	-0.0	31.5	585.9	79.6	16.3	1.000007
88000.0	20.0	-46.3	-0.0	30.7	586.4	72.9	15.6	1.000007
88500.0	19.6	-45.9	-0.0	30.0	586.9	71.8	16.2	1.000007
89000.0	19.1	-45.5	-0.0	29.3	587.4	76.2	18.2	1.000007
89500.0	18.7	-45.2	-0.0	28.6	587.9	80.6	20.1	1.000006
90000.0	18.3	-44.8	-0.0	27.9	588.4	85.1	21.8	1.000006
90500.0	17.9	-44.4	-0.0	27.2	588.9	89.8	23.1	1.000006
91000.0	17.5	-44.0	-0.0	26.6	589.4	94.4	24.3	1.000006
91500.0	17.1	-43.6	-0.0	25.9	589.9	98.4	25.4	1.000006
92000.0	16.7	-43.2	-0.0	25.3	590.4	100.1	26.1	1.000006
92500.0	16.3	-42.8	-0.0	24.7	590.9	101.8	26.8	1.000005
93000.0	16.0	-42.5	-0.0	24.1	591.4	103.4	27.2	1.000005

** AT LEAST ONE ASSUMED RELATIVE HUMIDITY VALUE WAS USED IN THE INTERPOLATION.

UPPER AIR DATA
0805003902
WHITE SANDS

STATION ALTITUDE 3989.00 FEET MSL
4 JUNE 69 1000 HRS MDT
ASCENSION NO. 570

WSTM SITE COORDINATES
488580.00 FEET E
185045.00 FEET N

TABLE X (Cont)

GEOMETRIC ALTITUDE MSL FEET	PRESSURE MILLIBARS	TEMPERATURE AIR DEGREES	TEMPERATURE DEWPOINT CENTIGRADE	REL. HUM. PERCENT	DENSITY GM/CUBIC METER	SPEED OF SOUND KNOTS	WIND DATA DIRECTION (TN) DEGREES	SPEED KNOTS	INDEX OF REFRACTION
93500.0	15.6	-42.1	0.	-0. **	23.5	591.9	103.9	25.0	1.000005
94000.0	15.3	-41.7	0.	-0. **	23.0	592.4	104.4	22.7	1.000005
94500.0	14.9	-41.3	0.	-0. **	22.4	592.9	104.8	20.5	1.000005
95000.0	14.6	-40.9	0.	-0. **	21.9	593.4	103.5	20.7	1.000005
95500.0	14.3	-40.5	0.	-0. **	21.4	593.9	102.2	21.0	1.000005
96000.0	13.9	-40.2	0.	-0. **	20.9	594.3	100.9	21.3	1.000005
96500.0	13.6	-40.0	0.	-0. **	20.4	594.5	99.4	20.6	1.000005
97000.0	13.3	-39.9	0.	-0. **	19.9	594.7	97.8	19.8	1.000004
97500.0	13.1	-39.7	0.	-0. **	19.5	594.9	96.2	19.1	1.000004
98000.0	12.8	-39.6	0.	-0. **	19.1	595.1	100.0	22.5	1.000004
98500.0	12.5	-39.4	0.	-0. **	18.6	595.3	103.8	26.0	1.000004
99000.0	12.2	-39.3	0.	-0. **	18.2	595.4	107.3	29.1	1.000004
99500.0	12.0	-39.2	0.	-0. **	17.8	595.6	109.0	29.0	1.000004
100000.0	11.7	-39.0	0.	-0. **	17.4	595.8	110.7	28.8	1.000004
100500.0	11.4	-38.9	0.	-0. **	17.0	596.0			1.000004
101000.0	11.2	-38.7	0.	-0. **	16.6	596.2			1.000004
101500.0	10.9	-38.4	0.	-0. **	16.2	596.6			1.000004
102000.0	10.7	-37.3	0.	-0. **	15.8	598.0			1.000003
102500.0	10.5	-36.2	0.	-0. **	15.4	599.4			1.000003
103000.0	10.3	-35.1	0.	-0. **	15.0	600.8			1.000003
103500.0	10.0	-34.0	0.	-0. **	14.6	602.2			1.000003

** AT LEAST ONE ASSUMED RELATIVE HUMIDITY VALUE WAS USED IN THE INTERPOLATION.

STATION ALTITUDE 3989.00 FEET MSL
4 JUNE 69 1000 HRS MDT
ASCENSION NO. 570

MANDATORY LEVELS
0805003902
WHITE SANDS

WSTM SITE COORDINATES
488580.00FEET E
185045.00FEET N

TABLE XI

PRESSURE GEOPOTENTIAL		TEMPERATURE		REL. HUM. PERCENT	WIND DATA	
MILLIBARS	FEET	AIR DEGREES	DEWPOINT CENTIGRADE		DIRECTION DEGREES(TN)	SPEED KNOTS
850.0	5003.	18.2	5.4	43.	44.2	1.8
800.0	6694.	14.7	1.8	41.	81.2	4.0
750.0	8476.	11.7	-1.7	39.	42.4	7.6
700.0	10358.	8.1	-5.9	37.	48.2	12.7
650.0	12347.	3.4	-11.7	32.	65.8	11.4
600.0	14457.	-1.9	-15.3	35.	73.0	16.7
550.0	16703.	-7.5	-21.7	31.	80.7	16.3
500.0	19116.	-12.3	-22.1	44.	107.5	6.8
450.0	21734.	-17.5	-28.2	39.	70.0	4.5
400.0	24585.	-25.2	-34.0	44.	332.0	0.4
350.0	27727.	-32.1	-47.4	21.	257.0	3.1
300.0	31230.	-41.3	-80.2	1.**	262.3	14.0
250.0	35239.	-47.2	0.	-0.**	279.3	42.5
200.0	40016.	-53.6	0.	-0.**	284.0	43.6
175.0	42798.	-58.4	0.	-0.**	284.2	46.5
150.0	45961.	-60.9	0.	-0.**	286.2	44.0
125.0	49655.	-63.8	0.	-0.**	294.7	33.6
100.0	54107.	-67.3	0.	-0.**	294.6	16.9
80.0	58556.	-64.0	0.	-0.**	312.0	9.0
70.0	61252.	-62.1	0.	-0.**	182.8	2.0
60.0	64395.	-59.9	0.	-0.**	118.9	8.4
50.0	68155.	-57.2	0.	-0.**	83.4	13.2
40.0	72787.	-55.7	0.	-0.**	99.6	18.0
30.0	78872.	-51.0	0.	-0.**	112.0	14.7
25.0	82778.	-49.4	0.	-0.**	103.5	17.3
20.0	87605.	-46.3	0.	-0.**	73.2	15.6
15.0	93944.	-41.4	0.	-0.**	104.7	21.1
10.0	103072.	-33.8	0.	-0.**		

** AT LEAST ONE ASSUMED RELATIVE HUMIDITY VALUE WAS USED IN THE INTERPOLATION.

RELEASE TIME (MDT)		SECOND-STAGE IMPACT DISPLACEMENT IN MILES DUE TO WIND										AZI- MUTH (DEG- REBS)	THEORETICAL IMPACT FROM LAUNCHER (IN MILES)		
		11-216 FT		216-4160 FT		4160-75700 FT		TOTAL							
				N-S	E-W	N-S	E-W			N-S	E-W				
RAWIN- SONDE	PIBAL	N-S	E-W	N-S	E-W	N-S	E-W	N-S	E-W	N-S	E-W		RANGE	N-S	E-W
0700	0830	0.0	0.0	0.2N	2.3E	5.8N	27.8W	6.0N	25.5W	353.2	68.0	67.5N	8.0W		
0700	0900	1.6N	2.2E	0.2N	3.8E	5.8N	27.8W	7.6N	21.8W	356.4	69.2	69.1N	4.3W		
0700	0915	0.0	0.0	1.1S	3.7E	5.8N	27.8W	4.7N	24.1W	354.3	66.5	66.2N	6.6W		
0700	0930	0.3S	0.6E	1.6S	3.3E	5.8N	27.8W	3.9N	23.9W	354.4	65.7	65.4N	6.4W		
0700	0940	0.5N	2.8E	1.3S	5.0E	5.8N	27.8W	5.0N	20.0W	357.8	66.5	66.5N	2.5W		
0700	0950	1.3S	1.3E	3.2S	2.4E	5.8N	27.8W	1.3N	24.1W	354.0	63.1	62.8N	6.6W		
*1000	*1000	0.9S	1.8E	3.2S	4.1E	5.0N	25.8W	0.9N	19.9W	357.8	62.4	62.4N	2.4W		

	AZI- MUTH (DEG- REES)	MILES FROM LAUNCHER		
		RANGE	N-S	E-W
LAUNCHER SETTING (ELEVATION 85.7 DEGREES QE)	020.0	65.4	61.5N	22.4E
NO WIND IMPACT	015.9	63.9	61.5N	17.5E
PREDICTED SECOND-STAGE IMPACT	357.0	70.0	70.0N	2.4W
SECOND-STAGE IMPACT, RADAR TRACK	357.7	62.1	62.0N	2.5W
PREDICTED BOOSTER IMPACT	056.0	1.0	0.6N	0.8E
BOOSTER IMPACT, RADAR TRACK	015.3	1.1	1.1N	0.3E

* Post Shoot Data

TABLE XII. IMPACT PREDICTION DATA
NIKE-HYD-C STV-86

~~Security Classification~~

(Security classification of title, body of abstract and indexing annotations must be entered when the overall report is classified)

DD FORM 1473
1 NOV 55

REPLACES DD FORM 1473, 1 JAN 64, WHICH IS
OBSOLETE FOR ARMY USE.

Security Classification

UNCLASSIFIED

Security Classification

14.

KEY WORDS

LINK A

LINK B

LINK C

ROLE

WT

ROLE

WT

ROLE

WT

1. Ballistics
2. Meteorology
3. Wind

UNCLASSIFIED

Security Classification